

REMARKS

Introduction

Claims 1-19 are pending in the application. The Office action has required formal drawings. Formal drawings are submitted herewith under a separate cover letter. Claims 1-19 are rejected. For the reasons discussed in detail below, all of the pending claims are in condition for allowance.

Obviousness Rejections

The Office Action has rejected claims 1-9 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,119,131 to Cabrera et al ("Cabrera") in view of U.S. Patent No. 6,356,915 B1 to Chtchetkine et al ("Chtchetkine"). The Office Action has rejected claims 2-8 and 10-15 under 35 U.S.C. § 103(a) as being unpatentable over Cabrera in view of Chtchetkine and further in view of U.S. Patent No. 6,012,130 to Beyda et al ("Beyda"). The Office Action has rejected claims 16-19 under 35 U.S.C. § 103(a) as being unpatentable over Beyda in view of Cabrera. Applicants respectfully traverse these rejections.

Applicants disagree that claims 1-9 are unpatentable over Cabrera in view of Chtchetkine. Applicants likewise disagree that claims 2-8 and 10-15 are unpatentable over Cabrera in view of Chtchetkine and further in view of Beyda. Applicants also disagree that claims 16-19 are unpatentable over Beyda in view of Cabrera. As set forth in the attached STATEMENT TO ESTABLISH COMMON OWNERSHIP, applicants submit that the current application and the

patent of Cabrera were, at the time the invention of the present application was made, owned by, or subject to an obligation of assignment to the same entity.

Pursuant to 35 U.S.C. § 103(c), applicants request that Cabrera be withdrawn as a reference for all § 103 rejections, including claims 1-9, 2-8, 10-18, and 16-19.

Applicants note that the Office Action indicated that the changes to 35 U.S.C. § 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application was not filed on or after November 29, 2000. Applicants disagree that the AIPA does not apply to the examination of this application. AIPA applies to applications filed on or after November 29, 1999. See AIPA § 4807(b). This application was filed on October 26, 2000. For applications filed on or after November 29, 1999, a 102(e) prior art reference may not be applied in an obviousness rejection under 35 U.S.C. § 103 if the patent and the pending application are commonly assigned or subject to an obligation of assignment at the time the claimed invention was made. For at least this reason, these claims are patentable over the prior art of record.

Prior Art Rejections

The Office Action has rejected claims 16-19 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,119,131 to Cabrera et al ("Cabrera"). Applicants respectfully traverse these rejections. In the following, applicants provide an overview of their invention and of Cabrera and then discuss the differences.

Applicant's technique is generally directed towards transparently extending the storage capacity of a computer when a new storage device is added by automatically including the additional storage capacity within the existing namespace of the file system. Using applicant's technique, there is no need to assign a separate drive letter and, thereby, create a new namespace for the additional storage mechanism. Applicant's technique effectively combines storage space from existing and new storage devices so that it appears as a single volume drive letter within the same namespace of a file system. This is accomplished through the use of link files dynamically created in the file system on the pre-existing storage device that point to files on the new storage device. Each link file may also contain part of the contents of a file. With applicant's technique, complete or partial files within this namespace may be automatically migrated from the pre-existing storage device to the new storage device. New files may simply be added to the existing namespace by placing a link file in the file system on the pre-existing storage device and storing the new file on the new storage device. Because links are maintained in the original storage device, applicant's technique also effectively supports the addition of removable storage. The namespace remains unchanged even if the new storage device is removed. Without using applicant's technique, a user would need to add the new drive under a new drive letter as a new volume with its own namespace. Note that the above description is for example and informational purposes only, and should not be used to interpret the claims, which are discussed below.

The system and technique disclosed by Cabrera is significantly different from applicants' and, furthermore, is not used to transparently extend the storage capacity of a computer when a new storage device is added. Rather, Cabrera is generally directed towards providing persistent volume mount points for logical volumes mounted in a computer system. The order in which a drive letter or mount name is assigned to the logical volumes of a computer system may change if the physical devices storing the logical volumes are rearranged in the computer between boots. Cabrera's technique may provide volume identifiers used to associate logical volumes created within a namespace with persistent mount names so that the volume mount points can be reconstituted when physical devices are moved within the system. (Cabrera, column 2, lines 14-19.) In order to facilitate the assignment of drive letter redirected names to logical volumes, the mount manager data structures may contain an entry for each of the twenty-four drive letters assignable to physical devices. Upon the initial boot of the computer, only the logical boot volume is assigned a drive letter. When a drive letter is requested for a logical volume during the initial boot process, the mount manager assigns the next available letter drive by storing the unique volume identifier in the corresponding entry in the data structure. The mount manager may then request the creation of a symbolic link object representing the association between the drive letter and the volume device name. On subsequent boots, each logical device is assigned its previous drive letter if one is present in the data structure. If a new logical device is introduced into the system during the boot process, the assignment of a drive letter is requested.

(Cabrera, column 14, lines 23-44.) Because the unique volume identifier for a logical volume is associated with a redirected name in the persistent mount manager data structure, the logical volume will always be assigned the same redirected name, either a drive letter or a mount name, even if the logical volume is presented to the mount manager in a different order. (Cabrera, column 7, lines 59-65.)

In contrast to the claims of the present invention, if Cabrera receives a request to create a file on a first storage mechanism in the namespace, then that created file will be stored on that first storage mechanism, and not on a second storage mechanism as claimed by applicants. In fact, if the first storage mechanism is removed between boots of the computer system or is temporarily removed during a boot session, then Cabrera may, upon re-introduction of the first storage mechanism, assess and locate the file on that first storage mechanism, even if the first storage device has been assigned a different device name or drive letter upon re-introduction of that first storage device. (Cabrera, column 9, lines 29 – 57.) To do so, Cabrera may assign a unique volume identifier to locate the appropriate mount name and/or drive letter in its data structure and may create a new symbolic link with the new device name so that the symbolic link may resolve the mount name and/or drive letter to the correct logical volume that contains the file. Because the unique volume identifier for a logical volume is associated with a redirected name in the persistent mount manager data structure, the logical volume that contains the file will always be assigned the same redirected name, either a drive letter or a mount name, even

if the logical volume is presented to the mount manager in a different order. (Cabrera, column 7, lines 59-67). Unlike applicants' link files that point to files on the new storage mechanism, Cabrera creates a symbolic link with the new device name so that the symbolic link may resolve the mount name and/or drive letter to the correct logical volume that contains the file. Using applicant's technique, there is no need to assign a separate drive letter for the second storage mechanism and, thereby, create a new namespace for the additional storage mechanism. Furthermore, because there is no need to assign a separate drive letter for the additional storage mechanism, there is no need to assign a redirected name. Applicant's technique effectively combines storage space from existing and new storage devices so that it appears as a single volume drive letter within the same namespace of a file system. Each and every one of these differences is significant.

Turning first to independent claim 16, applicants recite the limitations of "receiving a request to create a file on a first storage mechanism in the namespace" and "in response: creating the file on a second storage mechanism in the same namespace, providing a link on the first storage mechanism to the second storage mechanism, and maintaining at least some file data of the file on the second storage mechanism."

Using applicants' technique, new files may simply be added to the existing (same) namespace of a drive letter by placing a link in the file system on the pre-existing storage device and storing at least some of the file's data on the new storage device. The cited sections of Cabrera do not disclose any such

limitations as alleged by the Office Action. Instead, Cabrera describes assigning a unique volume identifier to locate the appropriate mount name and/or drive letter in its data structure and creating a new symbolic link with the new device name so that the symbolic link may resolve the mount name and/or drive letter to the correct logical volume that contains the file.

In contrast to Cabrera, applicants recite the limitations of “providing a link on the first storage mechanism to the second storage mechanism,” and “maintaining at least some file data of the file on the second storage mechanism.” In applicants’ technique, a link to the second storage mechanism is provided on the first storage mechanism. Significantly, the cited sections of Cabrera do not disclose these limitations but instead describe updating the mount manager’s data structures with a unique volume identifier, a persistent mount name, an assigned drive letter, and symbolic links. (Cabrera, column 11, lines 9–22.) Note that the symbolic links created in Cabrera are significantly different from applicants’ link files. Unlike applicants’ link files that point to files on the new storage mechanism, Cabrera creates a symbolic link with the new device name so that the symbolic link may resolve the mount name and/or drive letter to the correct logical volume that contains the file. Using applicant’s technique, for example, the file is created on the second storage mechanism *in the same namespace* and thus there is no need to assign a separate drive letter for the second storage mechanism, nor any need to create a new namespace for the additional storage mechanism. Furthermore, because of the use of the same namespace, there is no need to assign a separate drive letter for the additional

storage mechanism, nor any need to assign a redirected name as described in the cited section of Cabrera. Moreover, the redirected names in Cabrera point to the same storage mechanism and not to different first and second storage mechanisms as disclosed and claimed by applicants. (Cabrera, column 10, lines 53–67.) Each and every one of these differences is significant. For at least these significant reasons, applicants submit that independent claim 16 is patentable over the prior art of record.

Similarly, applicants respectfully submit that dependent claims 17-19 are not anticipated by Cabrera. Each of these dependent claims includes the limitations of “receiving a request to create a file on a first storage mechanism in the namespace,” and in response “creating the file on a second storage mechanism in the same namespace” as recited in independent claim 16. As discussed above, Cabrera fails to disclose these limitations. Moreover, each of these dependent claims includes the limitations of “providing a link on the first storage mechanism to the second storage mechanism,” and “maintaining at least some file data of the file on the second storage mechanism.” As discussed above, Cabrera also fails to disclose these limitations. In addition to the limitations noted above, each of these dependent claims includes additional patentable elements. For example, claim 19 recites the limitation of “modifying the request to include a file handle to the file on the second storage mechanism.” In applicants’ technique, a subsequent request to retrieve the file initially requested to be stored on the first storage device may be modified to include a file handle to the file on the second storage mechanism where it may have been

actually stored. Cabrera does not disclose this limitation. Instead the cited section describes creating and using a symbolic link between a redirected name and a boot session device name. (Cabrera, column 10, lines 41-67.) The redirected names in Cabrera point to the same storage mechanism and not to a different storage mechanism as disclosed and claimed by applicants.

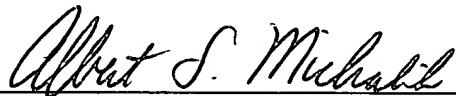
For at least these significant reasons, applicants submit that claims 16-19 are patentable over the prior art of record. Reconsideration and withdrawal of the rejections in the Office Action is respectfully requested and early allowance of this application is earnestly solicited.

Conclusion

In view of the foregoing remarks, it is respectfully submitted that claims 1-19 of the present application are patentable over the prior art of record, and that the application is in good and proper form for allowance. A favorable action on the part of the Examiner is earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (425) 836-3030.

Respectfully submitted,

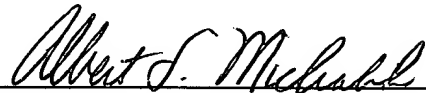


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STATEMENT TO ESTABLISH COMMON OWNERSHIP

(Regarding U.S. Patent No. 6,119,131)

Applicants, through the attorney of record, state that the present application and each of the above-identified references were, at the time the invention was made, owned by, or subject to an obligation of assignment to the same entity.



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